

What is claimed is:

1. An optical recording medium for performing at least one of recording and reproduction of information by irradiation of light, comprising;

on a substrate with fine concavities and convexities formed on a surface thereof on a side onto which said irradiation of light is performed

a formed film layer the surface of which is made a surface of fine concavities and convexities representing said fine concavities and convexities and which has at least a recording layer; and

a light transmission flattenable film which buries therein the fine concavities and convexities surface, and which has a transmission characteristic with respect to the irradiated light, and which has its surface polished and has a hardness enabling it to be polished

2. The optical recording medium according to claim 1, wherein the formed film layer has a reflection film formed on the substrate.

3. The optical recording medium according to claim 1, wherein the light transmission flattenable film consists of inorganic flattenable material.

4. The optical recording medium according to claim 1, wherein the light transmission flattenable film consists of flattenable material the formation temperature of which is 150 °C or less.

5. The optical recording medium according to claim 1, wherein

the substrate consists of organic material substrate;

and

the light transmission flattenable film consists of film-forming material the formation temperature of which is 150 °C or less.

6. The optical recording medium according to claim 1, wherein the light transmission flattenable film consists of spin-coat flattenable material.

7. The optical recording medium according to claim 1, wherein at least one of respective films constituting the formed film layer consists of a sputtering-formed film.

8. The optical recording medium according to claim 1, wherein the thickness of the light transmission flattenable film is made to be 400 nm or less.

9. The optical recording medium according to claim 1, wherein the thickness of the light transmission flattenable film is made to be equal to or smaller than the thickness of the light transmission flattenable film.

10. The optical recording medium according to claim 1, wherein the thickness of the light transmission flattenable film is made 100 nm or less.

11. The optical recording medium according to claim 1, wherein the light transmission flattenable film consists of spin-coat flattenable material having  $\text{SiO}_2$  as a main component.

12. The optical recording medium according to claim 1, wherein the light transmission flattenable film has a high level of flatness by having protrusions eliminated that damage an optical system disposed in the proximity of and in opposition to the surface of the light recording medium and performs the irradiation of light.

13. The optical recording medium according to claim 1, wherein  
the fine concavities and convexities have lands and grooves;

the difference in level between the land and the groove is selected to be at a value which only causes mutual interaction between these two to less occur with respect to the irradiated light; and

the recording of the information is performed with respect to the recording layer of either, or both, of the land and the groove.

14. The optical recording medium according to claim 1, wherein

a backing layer of dielectric material is formed on a surface where the light transmission flattenable film is formed.

15. The optical recording medium according to claim 1, wherein

a backing layer of dielectric material is formed on a surface where the light transmission flattenable film is formed, whereby the irradiation efficiency of a irradiated light with respect to the recording layer is enhanced.

16. The optical recording medium according to claim 1, wherein

a backing layer of dielectric material is formed on a surface where the light transmission flattenable film is formed, whereby the surface hardness of the optical recording medium is

enhanced.

17. The optical recording medium according to claim 1, wherein

the recording layer has a material layer the phase of which is changed by the irradiation of light from an amorphous state of low reflectance to a crystalline state of high reflectance or vice versa.

18. An optical recording medium according to claim 1, wherein

the recording layer has a material layer the state of magnetization of which is changed by the irradiation of light.

19. A manufacturing method of an optical recording medium for performing at least one of recording and reproduction of information by irradiation of light, comprising:

a manufacturing step of manufacturing a substrate having fine concavities and convexities formed on the surface thereof on a side onto which the irradiation of light is performed;

a forming step of forming a formed film layer the surface of which is made a fine concavities and convexities surface reflecting the fine concavities and convexities on itself and which has at least a recording layer;

a forming step of forming a light transmission

flattenable film which has buried in the formed film layer the fine concavities and convexities surface, and which has a transmission characteristic with respect to the irradiated light, has its surface polished and has a hardness enabling it to be polished; and

a polishing step of polishing at least the surface of the light transmission flattenable film.

20. The manufacturing method of an optical recording medium according to claim 19, wherein

before executing the forming step of forming the light transmission flattenable film there is executed a step of eliminating or truncating protrusions on the surface of the substrate.

21. The manufacturing method of an optical recording medium according to claim 19, wherein

the polishing step is a flying tape polish (FTP) step.

22. The manufacturing method of an optical recording medium according to claim 19, wherein

in the forming step of the formed film layer there is executed a step of forming a reflection film on the substrate.

23. The manufacturing method of an optical recording

medium according to claim 19, wherein

the forming step of the formed film layer uses a method of forming a film by sputtering.

24. The manufacturing method of an optical recording medium according to claim 19, wherein

the formation of the light transmission flattenable film is performed at a temperature of 150 °C or less.

25. The manufacturing method of an optical recording medium according to claim 19, wherein

the substrate is formed using an organic substrate material; and

the formation of the light transmission flattenable film is performed at a temperature of 150 °C or less.

26. The manufacturing method of an optical recording medium according to claim 19, wherein

the formation of the light transmission flattenable film is performed using a spin-coating method of inorganic material.

27. The manufacturing method of an optical recording medium according to claim 19, wherein

the formation of the light transmission flattenable film is performed to a thickness of 400 nm or less.

28. The manufacturing method of an optical recording medium according to claim 19, wherein

the formation of the light transmission flattenable film is performed to a thickness equal to or smaller than the thickness of the formed film layer.

29. The manufacturing method of an optical recording medium according to claim 19, wherein

the light transmission flattenable film is formed using a spin-coating method of performing spin-coating with respect to a flattenable material having  $\text{SiO}_2$  as a main component.

30. The manufacturing method of an optical recording medium according to claim 19, wherein

the fine concavities and convexities have lands and grooves;

the difference in level between the land and the groove is selected to be at a value which only causes mutual interaction between these two to less occur with respect to the irradiated light; and

the recording layer of either, or both, of the land and the groove is used as a recording portion of the information.

31. The manufacturing method of an optical recording



medium according to claim 19, wherein

after executing the forming step of the formed film layer having at least the recording layer there is executed the forming step of the light transmission flattenable film via a step of forming a dielectric backing layer on the surface of the formed film layer.

32. The manufacturing method of an optical recording medium according to claim 19, wherein

after executing the forming step of the formed film layer having at least the recording layer there is executed the forming step of the light transmission flattenable film via a step of forming a dielectric backing layer on the surface of the formed film layer; and

the dielectric backing layer is formed using a material layer to enhance the surface hardness of the optical recording medium.

33. The manufacturing method of an optical recording medium according to claim 19, wherein

the recording layer is formed using a material layer the phase of which is changed by the irradiation of light from an amorphous state of low reflectance to a crystalline state of high reflectance or vice versa.

34. The manufacturing method of an optical recording medium according to claim 19, wherein

the recording layer is formed using a material layer the state of magnetization of which is changed by the irradiation of light.